



CM/GC

An Alternative  
Project Delivery Method



# What is CM/GC?

- Construction Manager/General Contractor

Owners coordinate and manage the entire project with both the design and construction entities working together early on



# The History of Building



# The Master Building Philosophy

3 Jobs - Owner, Designer and Builder

1 Goal – Complete the project

# Ancient Egypt



Imhotep – 2630 BC

Design and builds  
the Great Pyramids



# Ancient Greece

Ictinus and  
Phidias – 450 BC

Teamed together  
to complete the  
Acropolis and the  
Parthenon





# Ancient Rome

Various Master Builders –

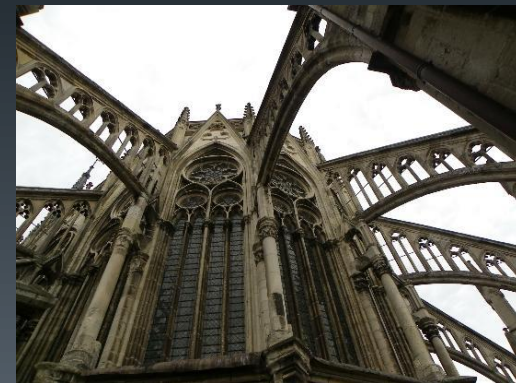
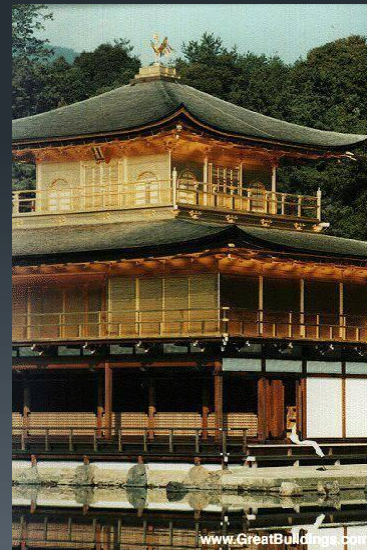
Vitruvius  
Hadrian  
Apollodorus  
- 80 AD



# The Age of Great Castles and Cathedrals



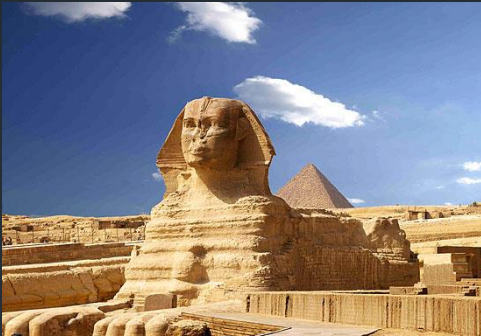
Matthias of Arras 1344  
Brunelleschi 1400  
Yoshimitsu 1397  
Maurice de Sully 1200  
Bernini 1600





# Master Builder Philosophy

## 4500 years of success



# Renaissance thru early 20<sup>th</sup> Century

- Tradesman begin to dominate the building environment
- The Mason becomes the most respected person on the project team
- Higher acclaim of the Engineers/Architect begins with licensing and a separation from the Builder
- Contractor is seen as less important

Begins the trends toward  
**PROFESIONALISM**

# United States Congress – Miller Act of 1935

- Creates clear Separation between Designers and Builders
- Owners hire the AIA/PE to design
- Owners hire General Contractor to Build
- Requires Project/Performance Bonds

# The Designer

I guess I would build it this way!?!?

- Creativity
- Design Standards
- Assumptions



# The Builder

Why did they  
design it this  
way ????

- Resources
- Materials
- Innovation





# The Project



Change orders

Arguments

Finger pointing

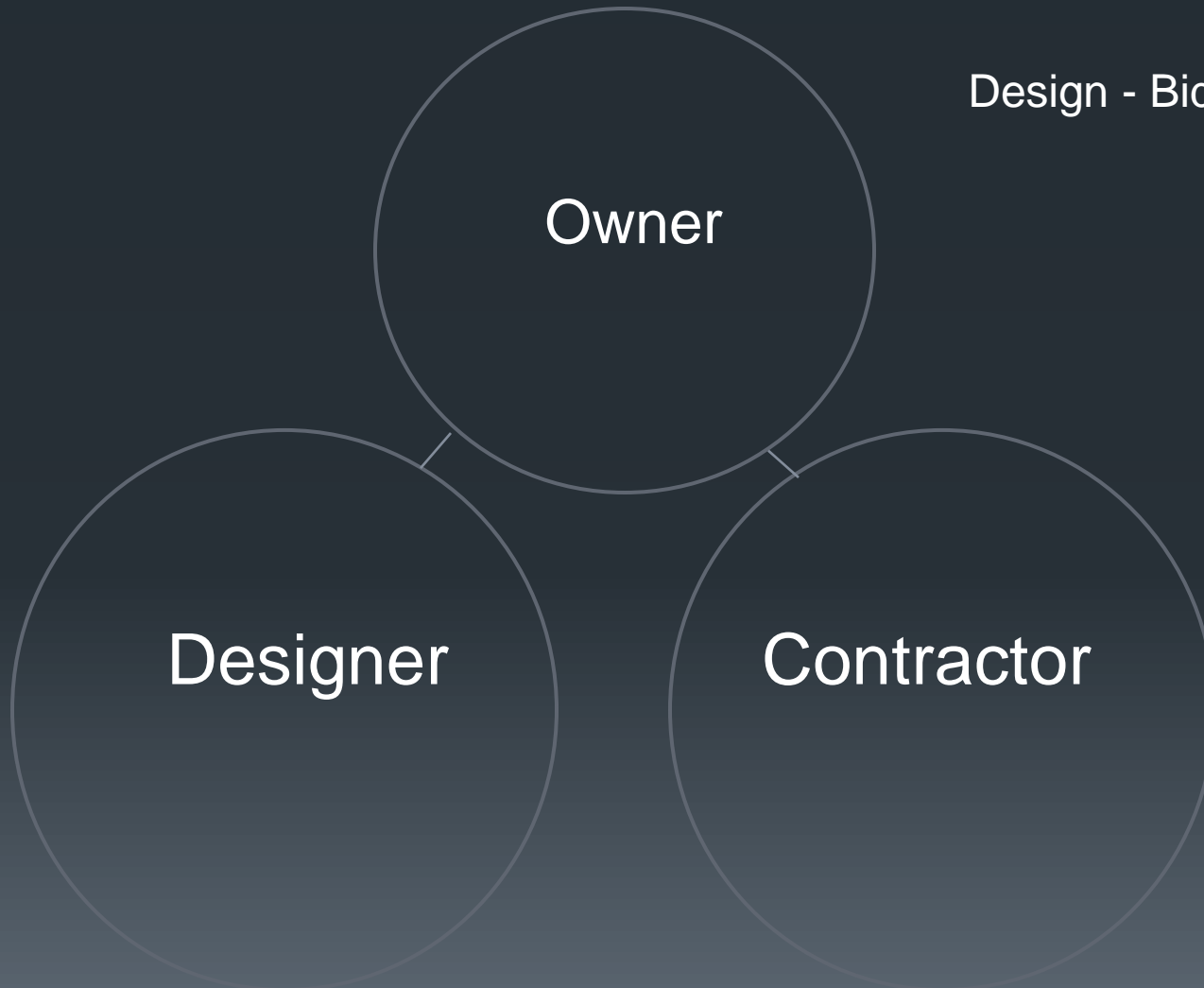
Delays

Increased costs

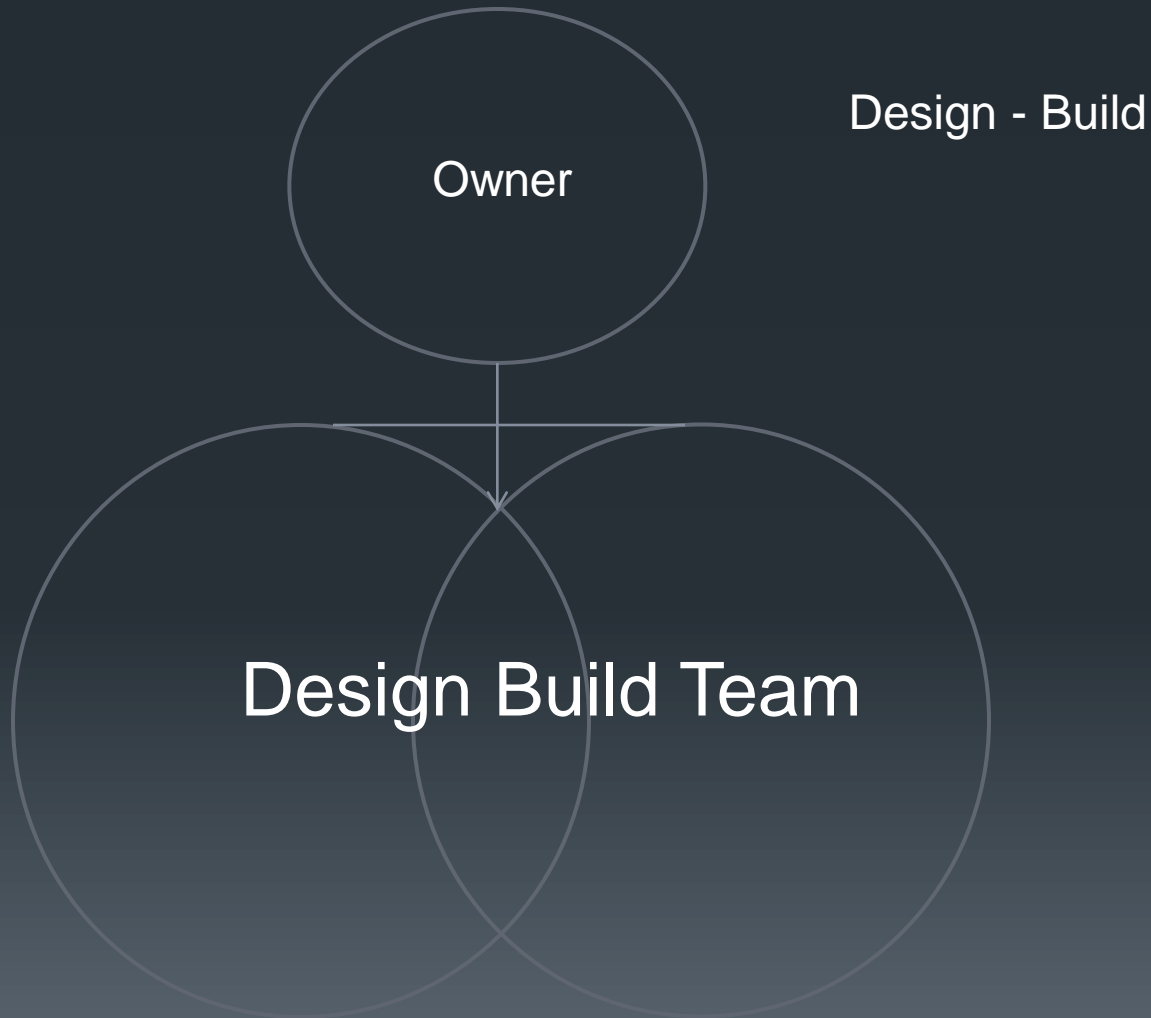
# Bring all groups together for one goal – a Successful Project



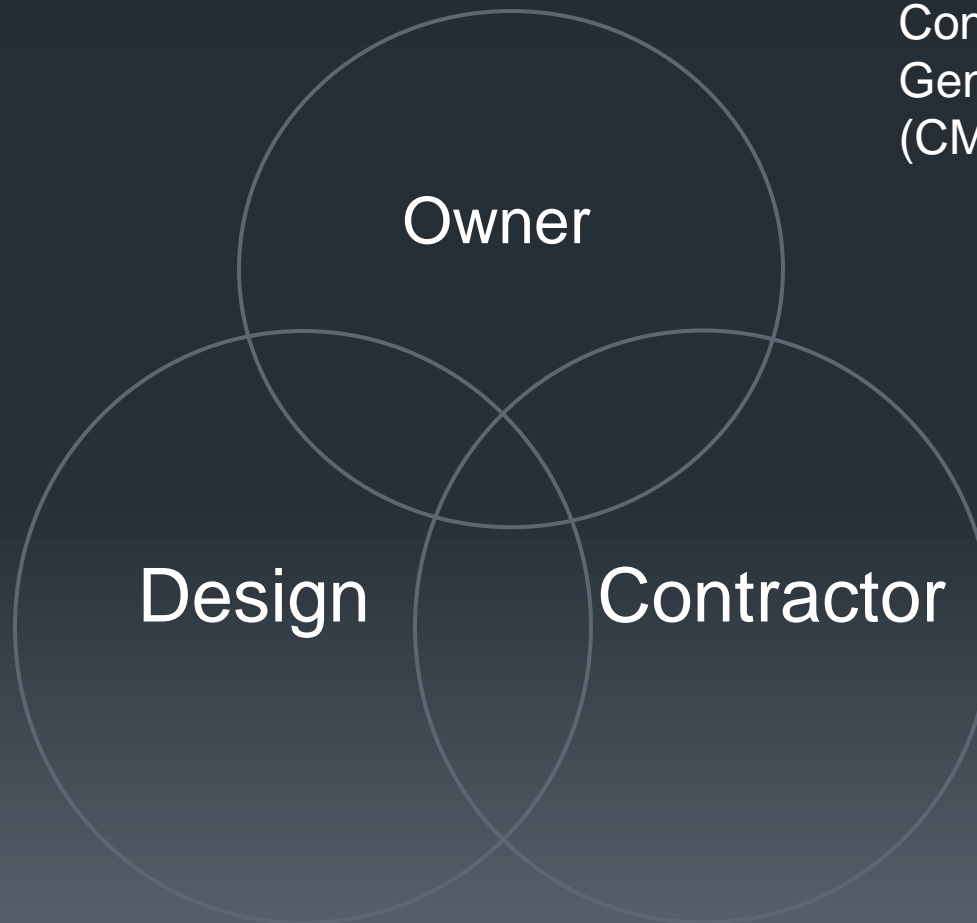
Design - Bid - Build



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Construction Manager /  
General Contractors  
(CM/GC)



# Construction Manager / General Contractor (CM/GC)



# Federal Highway Administration – Alternative Contracting Methods

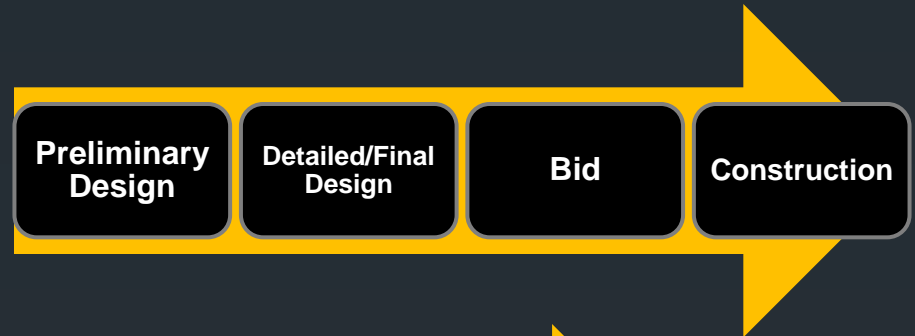
- The contractor acts as a consultant during the design process and can offer constructability and pricing feedback on design options and can identify risks based on the contractor's established means and methods. As noted, this process also allows the owner to be an active participant during the design process and make informed decisions on design options based on the contractor's expertise.

# Why States are considering/using CM/GC

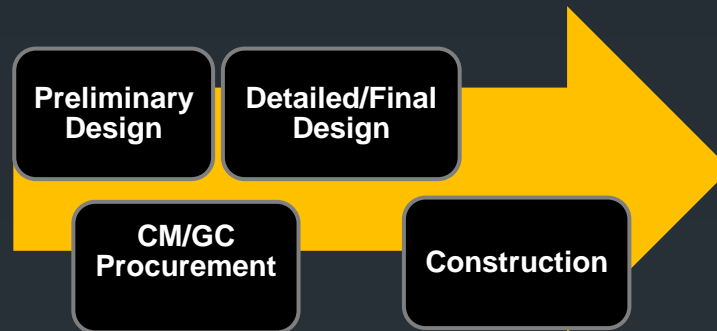
- Inherent project risk
- Opportunities for innovation
- Need for specialized qualifications
- Benefits from early procurement
- Limited or fixed budget
- Every day counts initiative ( EDC)

# Shortening Project Delivery

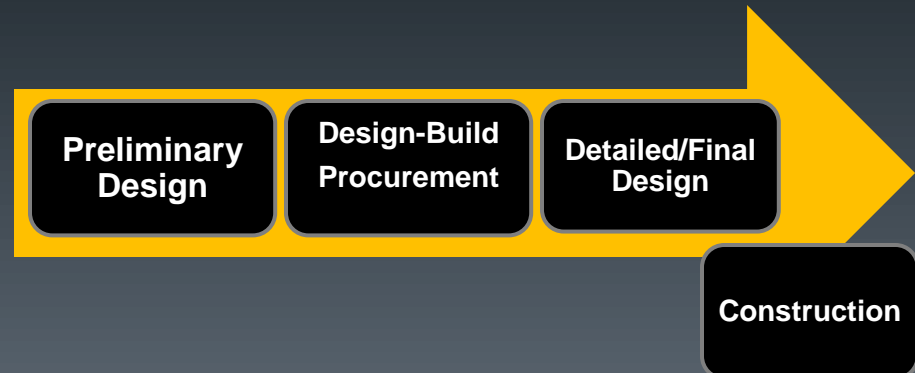
Design-Bid-Build



CM/GC



Design-Build



# 2 Phase Process

## ■ Phase 1

1. Owner selects a design firms from a new or previous consultant selection process. The Owner contracts with them.
2. The Owner selects an Independent Cost Estimator (ICE) who can be project related or statewide need
3. The Owner selects a CM/GC from a approved selection process and contracts with them
  - Based on various predetermined criteria in a RFQ/RFP
    - Best value
    - Qualifications
    - Technical score

# During the Design



Provide  
constructability  
Feedback

Identify and  
mitigate risks

Develop a cost  
model

Submit of  
Probable Cost  
Estimates with  
each plan  
submittal

Final product is  
an efficient  
buildable  
project



# 2 Phase Process

## Phase 2

Owner asks CM/GC to submit final bid Construction Cost and works towards a Guaranteed Maximum Price (GMP):

- Owner also has two additional estimates:
  - Designer-furnished EE
  - Independent Cost Estimate (ICE)

# CM/GC Process - Possible Outcomes

1. Owner agrees to a fair price – Begin Construction
2. Owner and CM/GC cannot agree to terms – project is repackaged for full advertisement

# How it Benefits Owners

- Opportunities for innovation during design
- Owners owns the design
- Improved cost control
- Improved design quality
- Value Engineering on the front side
- Schedule optimization
- Collaboration



# How it Benefits Designers

- Design Team works for the owner
- Opportunities for innovation can be developed by the potential team that will be building the project
- Better estimating
- Specific scheduling

# How it Benefits Contractors

- Early involvement in design decisions
- Risk reduction & allocation
- Improved cost control – limited change orders
- Schedule optimization
- Collaboration with the owner & designer



# Comparison of Delivery Methods

## GENERAL SUITABILITY OF DELIVERY MODELS

Project Traits	D-B-B	CM/GC
Risk Management	Very limited	Very effective
Collaboration w/Designer & Contractor	Very limited	Very collaborative
Price Certainty	None, subject to over-runs and change orders	Very effective, early price certainty during project development
Schedule Acceleration/Compression	No ability to overlap design & construction, can accelerate construction with A+B	Ability to overlap design & construction, ability to optimize schedule not just accelerate
Construction Quality	Low bid can compromise quality	Very beneficial to building a quality project

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Innovation	Design Innovation only, very limited opportunities for contractor innovation	Very effective for capturing design and construction innovation
Constructability	Very difficult to obtain construction input during design	Optimal delivery method for obtaining construction input before design is complete
Owner Control	High level control	Optimal level of owner control
Competitive Pricing	High level	Somewhat limited, competitive markup not final project cost

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Each project needs  
to consider which  
delivery method is  
right for that project

# Challenges to CM/GC

- Lacks Standard Competitive Low Bid

# Money isn't the only factor



## Who to choose



# Best Value



- Considerations for:
  - Experience
  - Time to complete the work
  - Project Team
  - Proposed Innovation
  - Risk Sharing

# Challenges in CM/GC

- Lacks Standard Competitive Low Bids
- Scrutiny of Selected firms/teams

Why did  
you pick  
them ?

Its going  
cost how  
much ?

whatever ?

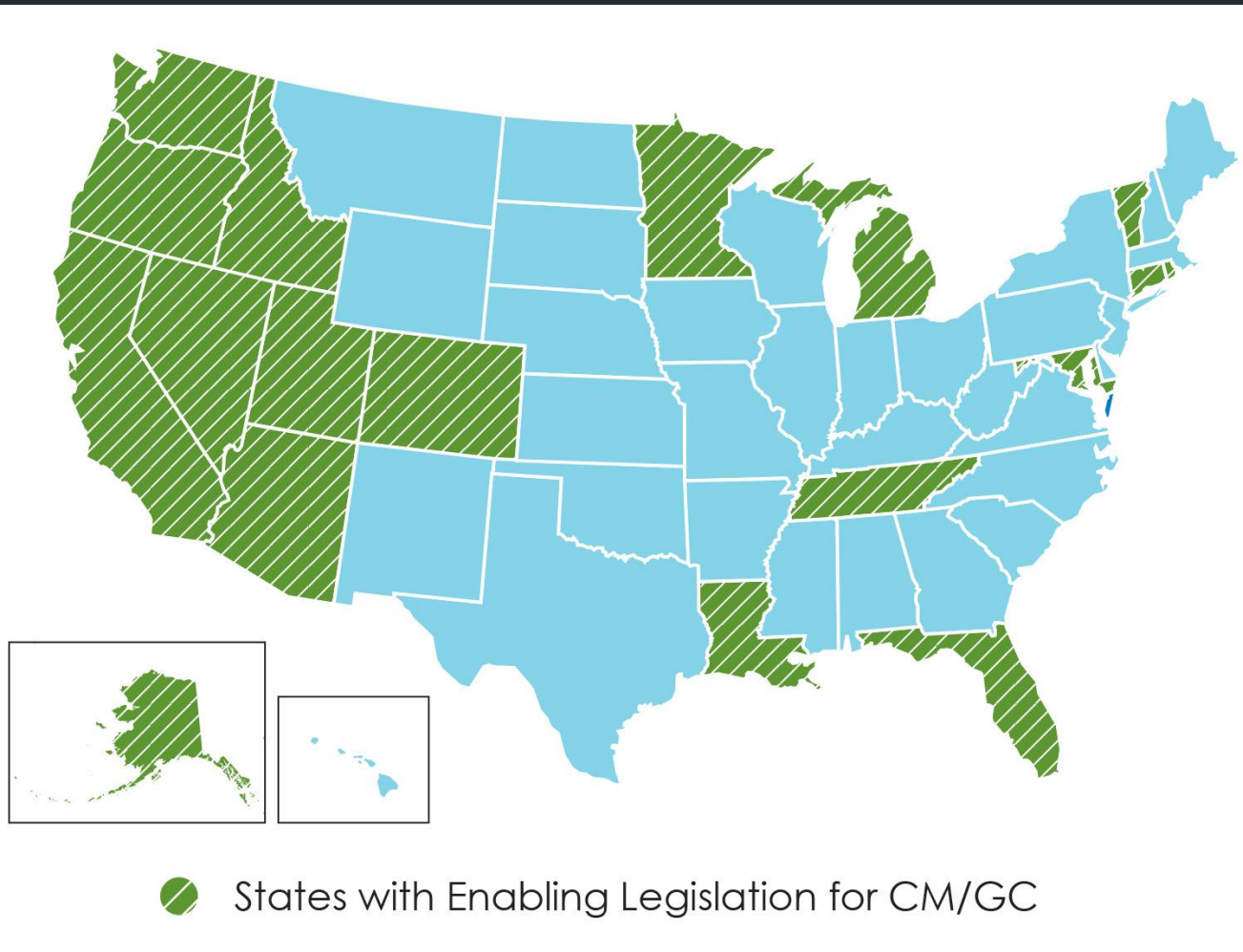
Its going  
take how  
long ?

Your going  
to do what ?



“Letting a contractor influence the design and then they are the only acceptable bidder ????”





# Delaware Receives Enabling Legislation in FY 2016

Supported in 80 *Del. Laws*, c.78 & 130 to “procure up to six projects by means of the Construction manager. General Contractor ( CM/GC) procurement methods.”



## Current CM/GC Projects approved by the General Assembly

- Walnut Street, Front Street to 4<sup>th</sup> Street, Wilmington
- Bridge 1-227 on Paper Mill Road, Newark
- Bridge 30150 on SR 1, Lewes Rehoboth Canal

# Working Together can improve safety and avoid major problems !







# Thank You

<http://www.fhwa.dot.gov/construction/cqit/cm.cfm>

- DBIA  
[www.dbia.org](http://www.dbia.org)
- Microsoft Clipart
- [www.google.com](http://www.google.com)